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Collision Detector Sensor Using an Ultrasonic Rangefinder

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Collision Detection Sensor Using an Ultrasonic Rangefinder: A Design Report

by

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EXECUTIVE SUMMARY

Distracted driving is becoming a greater cause of automobile accidents. As a result, insurance premiums are increasing. Currently, there is not a device that will indicate how closely a car is following before an accident occurs.

A collision detection sensor has been designed by adapting an ultrasonic rangefinder. In finding a good use for the rangefinder, the idea for using it in automobiles was discovered. The collision detection sensor has a Silicon Laboratories microcontroller for functionality. It also has a receiving circuit, a transmitting circuit, and a LCD display.

There are several environmental variables to consider when implementing the collision detection sensor. The ultrasonic rangefinder will need to be modified to become more useful in a real-world situation. The noisy environment of car travel, as well as the weak signal returned to the rangefinder makes its application difficult in its current configuration.

The noisy environment and weak return signal make the application of this device difficult. However, the collision detection sensor will implement digital signal processing to filter the noise and strengthen the return signal.

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